

REMARKS

Claims 1-3, 5-13 are now pending in the application. Claims 1, 2, 3, and 11 are amended and claims 4, and 14-18 are cancelled herein. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Komatsu et al. ("Growth and Characterization of Potassium Niobate (KNbO₃ from an Aqueous Solution" from IDS filed 3/24/2004) in view of Burger et al. (WO 02/00348 A1). This rejection is respectfully traversed.

The features of claim 4 were incorporated into claim 1, and claim 4 was cancelled accordingly. Accordingly, the rejection of claim 4 is moot.

Claim 1 was also amended based on the description on page 10, line 21 to page 11, line 8. No new matter has been added.

In the method of manufacturing a potassium niobate single crystal thin film according to claim 1, the method includes: preparing a liquid drop emission apparatus including an emission head which moves relative to a substrate and which emits liquid drops of a potassium niobate solution; operating the liquid drop emission apparatus so as to coat the substrate with the liquid drops of the potassium niobate solution; and precipitating orthorhombic potassium niobate single crystal from the liquid drops. In this method, the coating with the liquid drops and the precipitating of the orthorhombic potassium niobate single crystal are carried out repeatedly, and the coating with the liquid

drops is carried out so that the liquid drops are applied in a subsequent step and are overlapped with at least a part of the orthorhombic potassium niobate single crystal precipitated in a previous precipitating.

According to claim 1, since the liquid drop emission apparatus is used for coating the liquid drops on the substrate by emitting liquid drops of the potassium niobate solution on the substrate while moving relative to the substrate, it is possible to form, on the substrate, a predetermined pattern of the potassium niobate single crystal or a large area of the single crystal.

In the claimed invention, the coating with the liquid drops and the precipitating of the orthorhombic potassium niobate single crystal are carried out repeatedly. Therefore, when the liquid drops (the volume of each of which is small) discharged on the substrate are attached on the surface of the substrate, the moisture of the potassium niobate solution is likely to evaporate at a low temperature such as room temperature to initiate precipitating of single crystal. Thus, it is possible to form a predetermined pattern of the potassium niobate single crystal or a large area of the single crystal.

Specifically, by operating the liquid drop emission apparatus, the liquid drops are applied on the substrate so as to overlap with at least a part of the orthorhombic potassium niobate single crystal precipitated in a previous precipitating. According to the method, new single crystals can be precipitated one after another following a previously precipitated single crystal, which leads to forming a large area of single crystal thin films.

The Office Action alleges that it would have been obvious to a person of ordinary skill in art at the time of the invention to modify the combination of Komatsu and Burger to repeat the process to grow a larger crystal. However, Applicant respectfully submits

that these references do not disclose the above-described features of amended claim 1. Specifically, the cited reference do not disclose a liquid drop emission apparatus including an emission head which moves relative to a substrate and which emits liquid drops of a potassium niobate solution. Furthermore, the cited references do not disclose how to coat the substrate with the liquid drops nor how to overlap with the orthorhombic potassium niobate single crystal precipitated in a previous precipitating.

Since the above-described features of amended claim 1 are not disclosed in either Komatsu or Burger, it is not possible to obtain the claimed invention for the combination of Komatsu and Burger.

Claims 2, 3, 5, and 6-13 depend from claim 1. These claims are not obvious for at least the same reason as their base claim.

In conclusion, claims 1, 2, 3, 5, and 6-13 of the present application are neither anticipated nor render obvious by the above-described cited documents. Accordingly, reconsideration and withdrawal of these rejections are respectfully requested.

DOUBLE PATENTING

Claims 1 to 13 are provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 to 12 of co-pending application No. 10/916,208 in view of Komatsu et al. ("Growth and Characterization of Potassium Niobate (KNbO₃) Crystal from an Aqueous Solution") and Burger et al. (WO 02/00348 A1). Furthermore, claims 1 to 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of co-pending application No. 10/761,147 in view of Komatsu and Burger.

The Applicant elects to file Terminal Disclaimers, included herewith, to overcome the double patenting rejections.

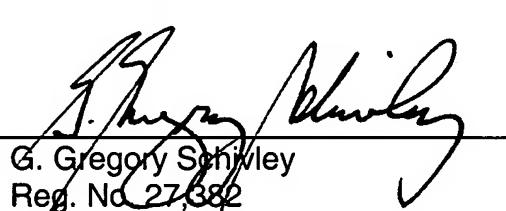
Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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